Docket No.: 50060-034

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of	:	
Nicholas Dominic WELLS	:	
Serial No.: 09/355,268	:	Group Art Unit: 2655
Filed: April 13, 2000	:	Examiner: M. Opsasnick
For: RE-CODING DECODED AUDIO	:	

TRANSMITTAL OF APPEAL BRIEF

Commissioner for Patents
Washington, DC 20231

Sir:

Submitted herewith in triplicate is Appellant(s) Appeal Brief in support of the Notice of Appeal filed January 12, 2005. Please charge the Appeal Brief fee of $500.00 to Deposit Account 500417.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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APPEAL BRIEF

Commissioner for Patents
Washington, DC 20231

Sir:

This Brief is submitted pursuant to the appeal of the final rejection of claims 1 through 20, the Notice of Appeal filed January 12, 2005. The claims have been at least twice rejected in separate Office Actions.

REAL PARTY IN INTEREST

The real party in interest in this application is British Broadcasting Corporation.

RELATED APPEALS AND INTERFERENCES

No other appeals or interferences are believed to affect or be affected by a decision in this appeal.

STATUS OF CLAIMS

Claims 1 through 20 stand under rejection. No claim has been allowed.

STATUS OF AMENDMENTS

An Amendment was filed November 10 2004 under 37 CFR § 1.116 in response to the Final Office Action, dated July 12, 2004. The Advisory Action of January 4, 2005 indicated that the Amendment will be entered for purposes of Appeal. The claims copied in the Appendix to this Brief reflect entry of the Amendment.

SUMMARY OF INVENTION

The present invention relates to methods of processing audio signals, which signals can exist in the uncoded or coded (that is to say data reduced or bit rate reduced) domains. The invention recognizes that studio processing, such as fading switching or mixing operations, is more easily performed on signals in the uncoded domain. Cascaded decoding and subsequent re-encoding is therefore often necessary in the studio environment, but can lead to a degradation in signal quality, as explained on the first page of the specification. There is therefore provided a method which allows a compressed signal to be decoded (possibly to allow studio processing to be performed) and then re-encoded with minimum reduction in quality.

Representative independent claim 1 is copied below.

> 1. A method of audio signal handling, comprising the steps of receiving a compression encoded audio signal and compression decoding the compression encoded audio signal to produce a decoded audio signal, characterized in that the method further comprises: deriving an auxiliary data signal relating to the compression encoded audio signal to be communicated together with the decoded audio signal and for use in re-encoding the decoded audio signal; communicating the auxiliary data signal together with the decoded audio signal; and re-encoding the

decoded audio signal utilizing information from the auxiliary data signal.

Fig. 2, for example, illustrates the embodiment of the invention described at pages 6 and 7 of the specification. An encoded audio signal enters a decoder (D1) at the top left of the Figure. The decoder produces a linear PCM (uncoded) signal which passes through studio equipment (S) and to encoder (C), where it is re-encoded to provide the coded audio output. While the signal exists in PCM (uncoded) format for undergoing studio processing in the central portion of the diagram, the input and output of the embodiment of Fig. 2 are both coded (eg MPEG) audio signals. Together with the PCM (uncoded) signal, an auxiliary signal, shown dashed line, also passes from the decoder (D1) to the encoder (C). This auxiliary signal carries information relating to the coded audio input, and is used in re-encoding the signal at coder (C) to minimize quality loss during encoding.

Reference is made to the specification for further description of the present invention, including other claimed embodiments.

ISSUES

Whether claims 1 through 8, 10 through 16 and 18 through 20 are unpatentable under 35 U.S.C. §102(e) for anticipation by U.S. patent 5,583,962 (hereinafter "Davis").

Whether claims 9 and 17 are unpatentable over Davis in view of a publication identified as "ISO/IEC 11172-3" (hereinafter "ISO/IEC").

SUMMARY DESCRIPTION OF DAVIS

Davis is directed to recording, transmission and reproduction of multi-dimensional or multi-channel audio signals, and more particularly the encoding and decoding thereof. Encoded signals may be carried by a composite signal and a steering control signal (column 1, lines 10-12). Davis therefore

addresses the well known problem of encoding a signal for more efficient storage or transmission of that signal, and subsequently decoding the signal for reproduction thereof..

Columns 1-5 contain a short background of audio encoding and are not relied upon in the Examiner's rejection of the present application.

The disclosure of the invention from Column 6, line 44 to Column 7, line 16 describes a first embodiment with reference to Fig. 2, having an encoder (204, 206) receiving a plurality of input channels, and providing at its decoder (212) the same number of output channels. Fig. 3, described at Column 7 lines 17 to 36, shows a second embodiment, again having an encoder (304, 306) at the input and a decoder (312) at the output. It is noted that these embodiments of the Davis invention are the opposite of the embodiment of the present invention described above, in which a decoder receives the input, and an encoder provides the output.

There then follows in Davis a detailed explanation of the processing required to handle the multiple input and output channels of the embodiments of Figs. 2 and 3. This passage is not relied upon in the Examiner's rejection of the present application. Lines 38 to 64 of Column 8 describe typical, prior art, single-channel subband encoding and decoding.

Column 9, line 48 to Column 10 line 65 describes further optional features of Davis, including for example adaptive subband steering, selective treatment of subbands and phase control.

SUMMARY DESCRIPTION OF US ISO/IEC

This prior art publication presents a generic disclosure of an MPEG scheme.

ARGUMENT

It is urged that claims 1through 8, 10 through 16 and 18 through 20 are not anticipated by Davis

under 35 U.S.C. §102(e).

Claims 1-8, 10-16 and 18-20 were rejected under 35 U.S.C. §102(e) as being anticipated by Davis at paragraph 2 of the final Office Action. Applicant's amendments dated November 10 2004 were considered but were not deemed by the Examiner to place the application in condition for allowance.

Case law is well settled that anticipation, under 35 U.S.C. § 102, requires that each element of a claim in issue be found, either expressly described or under principles of inherency, in a single prior art reference. *Kalman v. Kimberly-Clark Corp.,* 713 F.2d 760, 218 USPQ 781 (Fed. Cir. 1983); *Richardson v. Suzuki Motor Co.,* 868 F.2d 1226, 9 USPQ2d 1920 (Fed. Cir. 1989) *cert. denied,* 110 S.Ct. 154 (1989). The term "anticipation," in the sense of 35 U.S.C. § 102, has acquired an accepted definition meaning "the disclosure in the prior art of a thing substantially identical with the claimed invention." *In re Schaumann,* 572 F.2d 312, 197 USPQ 5 (CCPA 1978). The initial burden of establishing a basis for denying patentability to a claimed invention rests upon the examiner. *In re Fine,* 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Thorpe,* 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985); *In re Piasecki,* 745 F.2d 1468, 223 USPQ 785 (Fed. Cir. 1984). To satisfy this burden as to the claims so rejected, therefore, each and every element recited by these claims must be shown by the Examiner to be disclosed in Davis. It is submitted that, for at least those differences discussed in detail below, no basis for anticipation has been established.

The Examiner has relied upon Figs. 4 and 5 of Davis in rejecting claim 1, and they will therefore be considered in depth. These figures illustrate the generic principles of well known subband encoding and decoding. These generic principles are also discussed in the background art section of Davis, at column 4, line 45 to column 5, line 20.

Fig. 4 shows a single channel, uncompressed audio signal input, which passes to a filter bank 1010, which outputs a plurality of bandwidth divided signals in the well known manner. These signals are

passed to encoder 1030 where they are converted into quantized code words, again using any well known coding technique. Finally, the encoded bits are assembled at formatter 1040, into an appropriate format depending on the desired application eg transmission or storage. Samplers 1000 and 1020 are shown dashed line in Fig. 4. The placement and exact function of these samplers depend on whether the filter bank is implemented in the digital or analog domain. As explained, both in the background art section and at Column 8 of Davis, the sampler will be in either one or other of the positions indicated in Fig. 4. The sampler acts as an analog to digital converter (ADC) as is well known.

Fig. 5 shows an encoded audio signal input, which passes to a deformatter 1050, which disassembles the codewords and arranges them in a form suitable for decoding. The rearranged codewords then pass to decoder 1060, which outputs a plurality of uncoded bandwidth divided signals in the well known manner. These signals are passed to inverse filter bank 1080 where they are merged into a single uncoded signal, using any well known spectral reconstruction technique. Converters 1070 and 1090 are shown dashed line in Fig. 5. In analogous fashion to Fig. 4, a single converter will be in either one or other of the positions indicated in Fig. 5 according to the implementation of the filter bank. The converter acts as a digital to analog converter (DAC) as is well known.

Davis then describes, at column 8 line 65 to column 9, line 47, the concept of subband steering. This is a process whereby spectral components from multiple channels are combined to form a composite signal and a steering signal. The composite signal is an audio information signal produced by an encoder, as explained at column 6, lines 22 to 24. It is stated that the steering control signal is generated in either of the two ways shown in Figs. 2 and 3 of Davis, discussed above.

Claim 1

The method of Claim 1 requires, amongst other things, the steps of receiving a coded audio signal,

decoding the encoded audio signal and re-encoding the decoded audio signal. Davis does not disclose these three steps. For example, there is no re-encoding step disclosed in Davis. Davis discloses an encoder and a decoder in a conventional cascade arrangement, to enable an audio signal to be stored or transmitted in the encoded domain. As noted above, Davis addresses a different problem to that of the present invention, and discloses a correspondingly different solution.

The method of claim 1 additionally requires the steps of deriving an auxiliary signal relating to the compression encoded audio signal to be communicated together with the decoded audio signal and for use in re-encoding the decoded audio signal.

The Advisory Action states that the Davis reference can be read on the claim language considering "the deformatter breaks up the signal into the encoded audio information and auxiliary data."

Figs. 4 and 5 of Davis have been discussed in depth above. There is no mention or suggestion whatsoever in the disclosure of Figs. 4 or 5 of any auxiliary signal. The deformatter merely disassembles code words and arranges them in a suitable format/order. No auxiliary data is derived.

No detailed explanation of the processes illustrated in Fig. 4 or Fig. 5 is provided in the Office Actions. No detailed explanation would or could be expected since these figures are intended only to illustrate subband coding at the highest level. Indeed, the figures are so generic that the filter bank and subband samples are not even specified to be digital or analog. No detailed inference could have been made by a skilled artisan from figures 4 and 5 and the corresponding passages of Davis.

The Examiner further asserts that "the converter (1070; which can be construed as a type of encoder) uses the auxiliary data with the decoded audio data to prepare the bits for the inverse filter bank."

As explained above, the converter is a digital to analog converter. This is not, and can not be construed as a type of encoder. Furthermore, there is no mention of auxiliary data in relation to Fig. 5. Even if auxiliary data were present, it is not understood how it could be used in digital to analog

conversion. A further flaw in the Examiner's assertion is that converter 1070 need not even exist, and is only present if the inverse filter bank is implemented by analog means.

Davis states at column 11, lines 18-19 that Fig. 5 illustrates the basic structure of a subband decoder. The Figure shows only three generic decoding blocks: a deformatter, a decoder and an inverse filter bank. A digital to analog converter is also included at some point in the process. No part of the simple decoder of Fig. 5 can be considered to be an encoder or re-encoder.

As a brief summary, the present invention as defined by Claim 1 requires, *inter alia*,:

> deriving an auxiliary data signal relating to the compression encoded audio signal to be communicated together with the decoded audio signal and for use in re-encoding the decoded audio signal.

The Examiner has considered steering signal 310 (Fig. 3) as auxiliary data, but this is derived during encoding (304, 306) and <u>not</u> during decoding. No other feature of Davis can be considered as auxiliary data.

Claim 1 further requires the step of:

> communicating the auxiliary data signal together with the decoded audio signal.

Nowhere in Davis is any auxiliary data communicated together with decoded audio. I t is noted that steering signal 310 (Figure 3) is only communicated with <u>coded</u> audio 303.

A still further requirement of Claim 1 is the step of:

> re-encoding the decoded audio signal utilizing information from the auxiliary data signal.

No re-encoding of decoded audio is disclosed in Davis. The Examiner has made reference to Fig. 5, but no re-encoding is performed in Fig. 5. Furthermore, there is no disclosure of any auxiliary information whatsoever with reference to Fig. 5.

Claim 6

Claim 6 contains similar limitations to those of claim 1, discussed above. The above arguments are reiterated herein with respect to claim 6.

Claim 6 also recites the step of deriving an auxiliary data signal indicative of the analysis and quantization decisions employed for the compression encoded audio signal, and re-encoding the decoded audio signal utilizing information from the auxiliary data signal to produce a re-encoded audio signal employing the same analysis and quantization as the encoded audio signal.

These steps are not disclosed or suggested anywhere in Davis. Moreover, no argument has been put forward by the Examiner that such features can be read onto any part of Davis.

Claims 2 through 5, 7, 8, 10 through 16 and 18 through 20

Claims 2 through 5, 7, 8, 10 through 16, and 18 through 20 depend, directly or indirectly from independent Claims 1 or 6. As the parent claims recite the above described limitations that are not disclosed by Davis, it is submitted that the rejection under 35 U. S. C. § 102 is not viable.

Claims 9 and 17

Claim 9 is dependent from claim 1. Claim 17 is dependent from claim 16. Claims 9 and 17 have been rejected under 35 U. S. C. § 103(a) as being unpatentable over Davis in view of ISO/IEC.

In the application of a rejection under 35 U.S.C. §103, it is incumbent upon the Examiner to factually support a conclusion of obviousness. *In re Mayne,* 104 F.3d 1339, 41 USPQ2d 1451 (Fed. Cir. 1997*); In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). A source in the applied prior art must be identified for: (1) disclosure of claim features; and (2) the realistic requisite motivation for combining applied references to arrive at the claimed invention with a reasonable expectation of

successfully achieving a specific benefit. *Smith Industries Medical Systems v. Vital Signs,* 183 F.3d 1347, 51 USPQ2d 1415 (Fed. Cir. 1999). This burden is not met if there is no showing that the combination of references would actually meet all the limitations of the claims under consideration.

ISO/IEC has been relied upon for disclosing MPEG technique, specifically to address only the claim limitations added by claims 9 and 17. ISO/IEC does not disclose or suggest those features of parent claims 1 and 6 that have been addressed in previously in the argument in traverse of the rejection of those claims. It is respectfully submitted that the record has not satisfied the first requirement for a viable rejection under 35 U. S. C. § 103: prior art disclosure or suggestion of all claim features. Resolution of whether or not it would have been obvious to apply the teachings of ISO/IEC in the Davis arrangement would not fulfill this requirement.

CONCLUSION

For the reasons advanced above, appellant respectfully urges that the rejections of Claims 1 through 8, 10 through 16 and 18 through 20 under 35 U.S.C. § 102(e) for anticipation by Davis, and Claims 9 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Davis in view of ISO/IEC 11172-3 are untenable . Reversal of these rejections is respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including

extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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APPENDIX

1. A method of audio signal handling, comprising the steps of receiving a compression encoded audio signal and compression decoding the compression encoded audio signal to produce a decoded audio signal, characterised in that the method further comprises: deriving an auxiliary data signal relating to the compression encoded audio signal to be communicated together with the decoded audio signal and for use in re-encoding the decoded audio signal; communicating the auxiliary data signal together with the decoded audio signal; and re-encoding the decoded audio signal utilising information from the auxiliary data signal.

2. A method according to Claim 1, wherein the auxiliary data signal comprises all or part of the encoded audio signal.

3. A method according to Claim 2, wherein the auxiliary data signal comprises audio-related data from the encoded audio signal.

4. A method according to Claim 3, wherein the auxiliary data signal comprises time information from the encoded audio signal.

5. A method according to Claim 4, wherein the auxiliary data signal further comprises program-associated data from the encoded audio signal.

6. A method of audio signal handling, comprising the steps of receiving a compression encoded audio signal which signal is compression encoded based on analysis and quantisation decisions,

and compression decoding the compression encoded audio signal to produce a decoded audio signal, characterised by the further steps of: deriving an auxiliary data signal indicative of the analysis and quantisation decisions employed for the compression encoded audio signal to be communicated together with the decoded audio signal and for use in re-encoding the decoded audio signal; communicating the auxiliary data signal together with the decoded audio signal and re-encoding the decoded audio signal utilising information from the auxiliary data signal to produce a re-encoded audio signal employing the same analysis and quantisation as the encoded audio signal.

7. A method according to Claim 6, wherein the analysis comprises application of a sub-band filter bank.

8. A method according to Claim 7, wherein the auxiliary data signal is indicative of the frequency analysis into sub-bands and the method of quantisation within each sub-band employed for the encoded audio signal frequency.

9. A method according to Claim 1, wherein the encoded audio signal is an MPEG audio coded signal.

10. A method according to Claim 9, wherein the auxiliary data signal contains information relating to one or more of: the position of audio frame boundaries in the encoded audio signal; frequency sub-bands; scale factors for the sub-bands within each audio frame of the encoded audio signal; bit allocation data for each audio frame of the encoded audio signal.

11. A method according to Claim 1, wherein the auxiliary data signal is combined with the decoded audio signal for communication along a common signal path with the decoded audio signal.

12. A method according to Claim 11, wherein the auxiliary data signal is formatted to enable an integrity check prior to use of the auxiliary data signal in a re-encoding process, to ensure transparent communication of the auxiliary data signal along a decoded audio signal path.

13. A method according to Claim 11, wherein the auxiliary data signal is carried in the least significant bits of a digital decoded audio signal.

14. A method according to Claim 11, wherein the auxiliary data signal is carried as user data bits in a recognized digital interface format.

15. A method according to Claim 11, wherein the auxiliary data signal is carried in the upper part of the audio spectrum.

16. A method according to Claim 15, wherein the auxiliary data signal is carried in higher frequencies associated with sub-bands unused in the compression encoding.

17. A method according to Claim 16, in which MPEG audio coding is employed, wherein a filter arrangement analogous to the MPEG analysis sub-band filter arrangement and its reciprocal, is employed for insertion of the auxiliary data signal into the decoded audio signal.

18. A method according to Claim 1, wherein the auxiliary data signal is carried in a separate path to the decoded audio signal.

19. A method according to Claim 18, wherein the auxiliary data signal path is disabled for independent re-encoding, in the event of processing of the decoded audio signal not being substantially transparent, thereby inhibiting use of information from the auxiliary data signal in re-encoding.

20. A method according to Claim 19, wherein a subsidiary auxiliary data signal is added to the decoded audio signal, indicative of such processing.